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ABSTRACT

The purpose of this study was to determine whether the private speech of 40 kindergarten children involved in a problem-solving task differed according to gender, socioeconomic status, sociability, and academic ability. The introductory chapter provides a brief summary of the theoretical views of Piaget and Vygotsky concerning private speech. Chapter 2 reviews research on private speech and its relationship to such variables as intellectual maturity and sociability. Also discussed are the private speech of boys and girls and that of children from lower socioeconomic backgrounds. Chapters 3 through 5 deal with methodology, results, conclusions and recommendations. Private speech was categorized according to Manning and White's 4 levels and 13 sublevels. Findings support Vygotsky's theory in that children considered by teachers to be below-average in academic ability used more unhelpful private speech than did children considered to be above-average. There were no differences at any of the four levels in the private speech of male and female subjects, of children considered above- or below-average in sociability, or of children from middle- and lower-class families. It is concluded that teachers might identify students needing extra attention by listening to the private speech of their young students. (RH)

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THE EFFECTS OF TEACHER-PERCEIVED ACADEMIC ACHIEVEMENT ABILITY, SOCIOECONOMIC STATUS, GENDER, AND SOCIABILITY ON THE PRIVATE SPEECH OF KINDERGARTEN STUDENTS DURING THE PERFORMANCE OF A TASK

by

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CHAPTER 1

Introduction

As a kindergarten teacher, this researcher has often observed the children in her classroom quietly talking to themselves while at play or while performing various classroom tasks. This apparent self-communication or private speech has been observed by psychologists and developmentalists for a number of years, and different theories as to its significance and/or purpose have been developed (Berk, 1986a).

Jean Piaget (1926), the well known Swiss developmental theorist, called this talking aloud to oneself "egocentric speech", and felt that it was a sign of the child's overall self-centeredness and cognitive immaturity. Piaget felt that this egocentric speech served no social purpose, and that as the child matured, it disappeared altogether.

The Russian psychologist, L.S. Vygotsky, however, felt that private speech served a very real purpose in the child's development. Vygotsky believed that this type of self-communication did not disappear, but that

it increased developmentally, and subsequently became inner speech, that type of speech which is audible only to oneself (Vygotsky, 1972).

In recent years researchers have begun to take a serious interest in the self-talk of children, and have developed a body of research dealing with the importance of self-talk and its use with regard to the improvement of cognitive strategies and self-regulation (Berk, 1986b; Kohlberg, Yaeger, & Hjertholm, 1968). Other investigations of children's private speech include its relationship to variables such as intellectual maturity and sociability (Berk, 1986a; Kohlberg et al., 1968). There appears to be, however, a tremendous lack of research in the area of private speech itself, and as to whether or not different types of children exhibit different types of private speech at different times. Also, most of the research dealing with the private speech of young children appears to have been done in settings in which children who are from white, middle class backgrounds were used as subjects (Berk,1986a; Berk & Garvin, 1984; Kohlberg et al., 1968).

Investigations into the type of speech used by children who differ with regard to such variables as gender, socioeconomic class, teacher-perceived academic achievement ability, and sociability, could possibly provide valuable information as to the academic and developmental needs of these children.

Purpose of the study

The purpose of this study was to investigate whether or not there is a difference in the private speech of kindergarten children according to gender, socioeconomic status, sociability, and teacher-perceived academic ability, while performing a a problem-solving task.

Specific Research Questions

1. Is there a statistically significant difference between the private speech of those kindergarten/readiness students who are perceived by their teachers to be of a high academic achievement level and those perceived as being on a lower academic achievement level?
2. Is there a statistically significant difference between the private speech of boys and the private speech of girls enrolled in kindergarten/readiness classes?

3. Is there a statistically significant difference between the private speech of those kindergarten/readiness students who are judged by their teachers to be above average in sociability and the private speech of those children who are perceived as being below average in sociability?
4. Is there a statistically significant difference between the private speech of those kindergarten/readiness children who are from middle class socioeconomic backgrounds and the private speech of those children who are from lower socioeconomic backgrounds?

Limitations

1. Because this study was conducted over a seven month period, the maturation of the subjects could have affected the study's results.
2. This study was conducted in a suburban school setting consisting of a lower to middle class socioeconomic population. Therefore, the generalizability of the results are restricted to similar populations.

Definitions of Terms

For the purpose of this study, the following terms are used and defined:

Self-talk	- the act of talking to oneself. Self-talk includes both private and inner speech.
Private speech or egocentric speech	- speech intended for one-self. Private or egocentric speech is always audible, although it may appear in the form of soft whispers or mutterings.
External speech or Social speech	- speech that is intended as a means of communication with others.
Task-relevant speech	- private speech of the subjects dealing with the specific problem-solving task used in the study.

Task-irrelevant speech - private speech of the subjects that is uttered during the study's specific problem-solving task, but is irrelevant to that task.

Summary

This chapter provides a very brief summary of the theoretical views of Piaget and Vygotsky concerning the phenomenon known as private speech. Previous research, such as investigations into the relationships between private speech and variables such as intellectual maturity and sociability are also discussed. The purpose for the study is stated along with its limitations and definitions of different terms to be used in the study.

Chapter two provides a review of the current research dealing with private speech and its relationship to such variables as intellectual maturity and sociability. There is also some discussion concerning the private speech of boys and girls as well as children from lower socioeconomic backgrounds.

Chapters three, four, and five deal respectively with this study's method, its results, and conclusions and implications.

CHAPTER II

Review of Related Literature

As discussed in chapter one, Piaget and Vygotsky had differing views as to the origin and purpose of private speech (Piaget, 1926; Vygotsky, 1972). Piaget (1926) felt that private speech serves no real function in the child's cognitive develpment. Vygotsky, however (1972), believed that it does indeed serve a very real function, that of self-guidance.

Theoretical Views of Piaget and Vygotsky

Piaget (1926) divided children's speech into two different categories, those being egocentric speech and social speech. He felt that egocentric speech was "presocial" and a sign of the child's cognitive immaturity and inability to take on the perspective of others. It was his opinion that egocentric speech had no cognitive function, and language did not guide thought, but instead, thought guided language (Pellegrini, 1981). Piaget (1926) divided egocentric speech into three stages, the first of which he termed repetition, followed by monologue and collective monologue.

Most of Piaget's (1926) work dealing with children consisted of his observations of them and their actions. In order for him to confirm his ideas as to the purpose of egocentric speech, he again used observation as his method.

Piaget (1926), along with his assistants, observed two six year old boys attending a school which allowed them freedom to move about within their environment while working at their own pace. Everything that these two boys said was written down in great detail, and then each utterance was categorized into one of the three stages of egocentric speech.

At one point Piaget observed two children sitting at a table and working on different activities. One child was drawing, but while he did so, he constantly talked to himself. Piaget (1926) wrote:

> ....he is not speaking to anyone. He is just thinking aloud over his drawing, just as people of the working classes mutter to themselves over their work. (p. 7)

While Piaget does appear to agree that the child is actually thinking while talking to himself, it is apparent that he does not believe that it is of any developmental value. His comparison of the child to

people of the working class is an obvious clue to his belief that this type of speech serves no real purpose.

Piaget (1926) also noticed children engaged in a collective monologue, where they actually appeared to be communicating with one another, but upon closer examination, were not interested in the thoughts of one another at all. They appeared to be pleased merely that others were present to hear them. An example of Piaget's belief that the collective monologue stage of egocentric speech is also of no value is as follows:

> Each of them sticks to his own idea and is perfectly satisfied. The audience is there simply as a stimulus. (p. 8)

Piaget (1926) felt that the egocentric speech of children is a very primitive and infantile form of language, that there is a high incidence of it in very young children, but that as children grow and mature, it disappears entirely, and is taken over by socialized speech.

The Russian psychologist, L.S.Vygotsky (1972), however, did not believe that Piaget's egocentric speech was "presocial". Instead, Vygotsky (1972) felt that egocentric or private speech was "parasocial", its

origins stemming from the child's verbal social interaction with adults (Pellegrini, 1981). Vygotsky felt that the actions of children between the ages of one and one-half and three are regulated by the verbal instructions of an adult (Pellegrini, 1981). At around age three children begin speaking these instructions aloud to themselves to regulate their behavior, and this private way of speaking to oneself serves a very real cognitive function, that of self-guidance. He felt that this need for self-guidance while performing a task is due to the child's inability to think covertly as do adults, and that as children mature, this need to verbalize one's thoughts becomes internalized and becomes inner speech, which is that speech heard only by oneself (Vygotsky, 1972). He felt that the only aspect in which inner speech differed from private speech was in its lack of vocalization.

Unlike Piaget, Vygotsky felt that egocentric speech is a reflection of the desire of children to communicate, but that because of their immaturity, they are unable to differentiate between themselves as the auditor and others as auditors (Kohlberg, Yaeger, & Hjertholm, 1968).

Vygotsky (1972), like Piaget, also observed the speech of young children. He wanted to disprove Piaget's belief that children's private speech has no social value, and that it is an exhibition of their lack of desire to be understood.

In one experiment, Vygotsky (1972) placed a child in a setting similar to that used by Piaget for his observations. The only difference in this setting was that the child could not be understood by the other children present, because they either spoke a foreign language or were deaf. Vygotsky observed that this child's private speech decreased dramatically, giving support to his theory that private speech does show communicative intent and is parasocial.

Vygotsky also observed that children's private speech varied according to the situation (Berk, 1985). As the difficulty of a task increased, so did the amount of private speech. Vygotsky (1972) noted that private speech seemed to follow a developmental pattern. In a review of Vygotsky's findings on this developmental pattern, Berk (1985) reported that private speech moves from its occurrence as an afterthought of children's actions to its simultaneous occurrence with action. It then

begins to precede action and becomes externalized thought where it serves as a tool for self-guidance. Finally, during the school years private speech becomes covert and is internal thought.

Kohlberg's Research

In recent years researchers have attempted to investigate the theories of both Piaget and Vygotsky. Kohlberg et al. (1968) attempted a series of four studies involving the private speech of young children, the first of which had three purposes. First, these researchers wanted to replicate Piaget's observations that there is a high incidence of private speech in young children, that it rapidly declines as these children age, and eventually it disappears in the early school years (Piaget, 1926). Secondly, these researchers were interested in assessing the relationship between private speech and the cognitive maturity of young children. And finally, Kohlberg and his colleagues wanted to assess the relationship between the amount of private speech and the social interaction between children and their peers.

In the first study (Kohlberg et al., 1968), 28 children between the ages of 4 and 7 were used as subjects, with one-half of the children being from

middle class homes and the remaining half being from working class families. The children were further divided into four subgroups; bright four-year-olds, average four-year-olds, bright six-year-olds, and average six-year-olds.

These children were each observed for two hours per day for two days. All speech regarded as egocentric was recorded and then scored and categorized according to Piaget's categories of repetition, monologue, and collective monologue. Interrater reliability was calculated and determined to be .85.

Upon examination of the amount of private speech uttered by the two groups, the researchers found a marked decrease with age, supporting Piaget's view that the amount of private speech declines as children grow and mature. Results also indicated that with regard to the amount of private speech used and its relationship to intellectual maturity, the researchers found no differences between the bright and average four-year-old children. However, the use of private speech between the bright and average six-year-old children showed a substantial difference, with a reported 5% use for the brighter six-year-olds and a reported 17.7% use for the children considered to be

average. This appears to support Vygotsky's theory that as children mature cognitively, their private speech turns inward and becomes inner speech.

With regard to sociability, the researchers found that when mental age was controlled, a slight overall positive correlation of .25 was found. This suggested that the more sociable, popular children used a bit more private speech than did the less popular ones. When looking at both groups individually, however, the researchers found that the younger, more popular children showed a positive correlation of .50, with the older children showing a slight positive correlation of .14. Again, this lends support to Vygotsky's view that private speech stems from the child's early social experiences.

In the second study done by Kohlberg (Kohlberg et al., 1968), the researchers attempted to validate the trends that were suggested in the first study. They also examined correlations of egocentric speech and intellectual maturity and age. The subjects were 112 children whose parents were of the middle class and college educated. The children ranged in age from 4 to 10 years. Sixteen more children were later added as

subjects, eight of whom were from a lower socioeconomic class.

Each of these children was observed for two ten-minute individual sessions, one session conducted with an adult male and the other conducted with an adult female. The observers placed each sentence-like utterance made by each child into one of the same categories used by Piaget, with the addition of another category, that of whispers or mutterings. Interrater reliability for the scoring of these remarks was .92.

When the data of both studies were combined, results indicated agreement between the two studies in that preschool and kindergarten children seem to engage in a substantial amount of private speech in social settings, and that the amount of private speech differs in different situations. The combined results also indicated a decline in the use of private speech after the age of 5. Again, Vygotsky's interpretation of private speech and its relationship to cognitive maturity was supported.

The third study done by Kohlberg et al. (1968) dealt with the importance of Vygotsky's proposed developmental course of private speech and investigated its suggested stages. These stages appeared to move

from the less mature forms of word play and repetitions to remarks to non-human objects, followed by descriptions of activity, self-guiding comments, and finally, whispers or mutterings. The results of this study, which included only 26 subjects, did indicate that self-guiding speech first replaced lower forms of private speech, and was itself eventually replaced by mutterings or whispers.

The fourth and final study in this series (Kohlberg et al., 1968) had three major purposes. First, the researchers sought to determine whether or not a relationship existed between private speech and culture and gender. Secondly, they wished to investigate Vygotsky's notion that private speech is used as a means of self-guidance, and that it would increase with the difficulty of the task. Finally, the researchers wanted to further investigate the apparent hierarchical forms of private speech evidenced in the third study.

This fourth study consisted of 34 children between the ages of 4 and 5. Ten American boys and seven American girls were used as subjects, along with nine Norwegian boys and eight Norwegian girls. All of the

children attended preschool, were relatively equal in mental age, and were all from middle class backgrounds.

The children were each given four different tasks to complete, with each task differing in difficulty. Private speech was recorded and coded during the performance of each task. Results indicated that neither sex nor culture had a significant influence on the use of private speech. Difficulty of task, however, did appear to have a significant influence. With regard to the hierarchical stages of private speech, in this fourth study they appeared to follow the same developmental sequence as in the third.

These four studies were among the first conducted in the area of children's private speech. The results provide some interesting information related to the characteristics and developmental sequence of this phenomenon. These studies were not only among the first to investigate the theories of Piaget and Vygotsky, but also among the first to attempt to ascertain whether or not a relationship exists between private speech and such variables as intellectual maturity, sex, and culture.

These studies, however, do present some problems and concerns. For example, in each study the majority of the subjects were from white, middle class backgrounds. The researchers reported that in study one one-half of the children were from working class homes. However, the authors did not provide a clear enough distinction between the classes. In addition, the researchers in study two reported that eight children of a lower socioeconomic class were added after the study began, but again, the authors did not provide a clear distinction between classes. Middle class Norwegian children were used in the last study in an attempt to determine whether or not a relationship exists between children's private speech and their culture. Norwegian and American children, however, may not be representative of two distinctly different cultures.

Recent Research

Berk and Garvin (1984), however, investigated the private speech of Appalachian children. These children were from families of a much lower socioeconomic class than were those children used as subjects in the studies of Kohlberg and his colleagues. Not only were these children different with regard to their families'

incomes, but they had had entirely different early experiences, came from different language environments, and boys were treated differently than were girls.

Berk and Garvin (1984) reported that in Appalachian families there is very little verbal communication between children and adults. Most communication is gestural. Girls are expected to talk, but boys are encouraged to be silent. Appalachian parents are stern disciplinarians.

Berk and Garvin (1984) hypothesized that if private speech is a function stemming from social speech and a precursor of inner speech, then these children, especially the boys, would develop cognitively at a slower rate than did those children observed in the studies conducted by Kohlberg et al. The sample consisted of 19 boys and 17 girls who were randomly selected from different age groups ranging from 5 years to 10 years. Each child was observed for two one-hour periods. Observers dictated the children's speech into a tape recorder. The children's speech was then coded as either private or social speech. The private speech was then further coded into categories similar to those used by Kolberg et al. (1968) with some revisions, resulting in a total of

nine mutually exclusive categories (Berk and Garvin, 1984).

The results of this study (Berk and Garvin, 1984) indicated that while there was no real significant difference in the amount of private speech across the ages studied, there did appear to be a developmental pattern similar to that found by Kohlberg et al. (1968), especially when examining the different categories of speech. When compared to Kohlberg et al's middle class subjects, Appalachian children of similar ages displayed higher incidences of the lower, more immature types of private speech and lower incidences of the more mature types. Inaudible muttering or whispering, which appears to precede inner speech (Vygotsky, 1972), occurred much less frequently at all ages among the Appalachian children.

Overall, Berk and Garvin (1984) found no significant difference between the amount of private speech displayed by boys and girls. Boys, however, displayed more immature forms of private speech than did girls, with inaudible muttering being considerably higher in girls. Results also appeared to show a positive correlation between social speech and private

speech, especially with regard to the less mature forms of private speech.

This study (Berk & Garvin, 1984) is important in that it examined the private speech of children who differ dramatically from those examined in Kohlberg et al.'s (1968) study on variables such as social class and culture. A major problem with this study, however, is its method of recording private speech. Children's speech should have been recorded directly into a tape recorder, rather than the observer dictating the speech into a recorder. This method could easily allow for an incorrect interpretation as to what type of private speech was used, especially with regard to the type of expression the child used. The expression the child uses may often be an indicator as to the way in which a particular remark should be coded.

In a later study conducted by Berk (1985) the private speech of 93 children from the ages of 3 to 5 was observed. These children attended either day care centers or preschools in middle to lower class areas of a small city located in the Midwest. She found that the children who appeared to be more socially advanced talked to themselves more, especially when in large groups. Again, this lends support to Vygotsky's idea

that private speech stems from early social experiences.

In an additional study, Berk (1986b) observed the private speech of 75 children attending the first and third grades of a laboratory school associated with a Midwestern university. The majority of these children came from white, middle class backgrounds. The overall results of this study again indicated that private speech moves through apparent developmental stages, consistent with Vygotsky's theory.

In a longitudinal study conducted by Bivens and Berk (1989), the private speech of 33 predominantly white, middle class children was observed. The children were observed for three years, beginning the year that they attended first grade, and were only observed while working independently on math assignments. During the observational periods, the observers coded the children's private speech into one of three levels and subclasses of those levels. The first level was that of self-stimulating, task-irrelevant private speech and included the subclasses of word play, task-irrelevant affect expression, and comments to imaginary others.

Level II dealt with task-relevant externalized private speech, and included the subclasses of describing one's activity and self-guidance, and task-relevant affect expression. The third level dealt with task-relevant external manifestations of inner speech, and included the subclasses of inaudible mutterings and tongue and lip movements.

The results of this study also indicated support for Vygotsky's theory that private speech undergoes age-related changes. Interestingly, Bivens and Berk found no significant effects of sex or IQ on private speech. This finding, however is possibly due to the fact that the subjects in this study were relatively equal in mental age.

In a more recent study conducted by Manning and White (in press), the private speech of kindergarten children considered to be analogical reasoners was compared to that of children considered to be nonanalogical reasoners. The private speech of 20 children was collected and compared in two different contexts, the first being spontaneous private speech uttered during a typical classroom task that was considered to be challenging. The second context involved the collection of teacher-induced private

speech uttered during the administration of a test to assess analogical reasoning. The children were also rated by their teacher as to their sociability.

In order to collect the spontaneous speech of the children while performing an independent and challenging task, the classroom teacher, who had been trained in private speech collection, sat behind each subject and recorded the speech on a notepad.

In order to collect the private speech uttered during the administration of the analogical reasoning test, the classroom teacher, who had been previously trained in the test's administration, asked the subjects to think out loud while answering a question, or to tell the teacher what the child said to himself/herself while answering a question.

All utterances of the 20 children were then coded using Berk's method (Berk, 1986b). The authors altered Berk's categories, which resulted in 4 major levels and 13 sublevels of private speech.

After scoring the analogical reasoning test, the researchers chose to examine the private speech (in both contexts) of the three children scoring highest and the three children scoring lowest. The children who scored highest were considered to be analogical

reasoners and the three remaining children were considered to be nonanalogical reasoners.

With regard to spontaneous speech, Manning and White (in press) found indications that analogical reasoners used less Level I and Level II private speech than the nonanalogical reasoners, but more Level III and Level IV private speech than the nonanalogical reasoners, with a difference of 55% more private speech used at Level IV. Similar findings were reported for teacher-induced private speech. Results also indicated that overall, analogical reasoners were rated by their teachers as more sociable. These findings agree with Vygotsky's theory as well as previous research in that private speech appears to stem from early social experiences, and that as children grow and mature cognitively, their private speech becomes progressively more mature. Finally, it turns inward and becomes inner speech. It is also important to note here that the primary focus of Manning and White's study was not the eventual internalization of private speech, but rather task execution was targeted as private speech utterances affect task accomplishment.

A major concern related to the results of this study is the validity of the collection of any kind of

teacher-induced private speech involving kindergarten students. It may be that these children do not understand what is expected of them when they are asked to tell what they say to themselves or to talk out loud when solving a problem. If Vygotsky (1972) was correct in his assumption that private speech stems from the child's inability to differentiate between speech for oneself and speech for others, then perhaps it is possible that a 5-year-old is not yet cognitively mature enough to differentiate between his/her own private speech and his/her own inner speech. If this is the case, then the child would be confused as to what the teacher wants to hear.

Summary

In summary, much of the research conducted in the area of private speech has used children from white, middle class backgrounds as subjects, and has attempted to investigate relationships that might exist between children's private speech and their intellectual maturity and sociability. Only a few studies have attempted to investigate any relationship that might exist between the private speech of children from different cultures and/or lower class socioeconomic backgrounds. Most of the research suggests that

private speech follows a progressive pattern of development consisting of different stages or levels, with the child's level of cognitive maturity and sociability determining the level of his/her private speech.

Conclusions

Much more study is required in the area of private speech, especially in different types of settings. So far, most research has been conducted in university laboratory schools. Most studies have been small and have dealt with predominantly white, middle class children. Additional investigations need to be conducted in public school settings, especially those consisting of children who come from lower class socioeconomic backgrounds and those whose populations consist of many different cultures.

This fascinating phenomenon of private speech and its apparent progression into inner speech is something of which teachers, especially those teachers of very young children, should be made aware, and to which they should pay close attention. As more research is conducted in this area, educators may see that by listening to their students, teachers can not only learn a great deal about where they are

developmentally, but also learn how these children think about themselves. If kindergarten teachers could be trained to listen to the spontaneous private speech of their young students, perhaps the private speech itself would prove to be a more valid instrument for determining their needs than some of the norm-referenced assessments that are required of these young children. This is especially true when considering individual children. Perhaps when faced with a student who is having problems, the teacher could listen to the private speech of that child and gain valuable information as to his/her individual needs. The teacher could then design a program individualized just for that child. Children could also be trained to use their private speech as an instructional tool so that they might guide themselves more effectively when performing a task, and by doing so, teach themselves self-reliance and gain self-confidence. This could not only save valuable time and expense, but could also prevent a child from becoming one of those who is passed from grade to grade and whose self-esteem is gradually destroyed.

CHAPTER III

Method

This study was conducted in order to answer the following specific research questions:

1. Is there a statistically significant difference between the private speech of those kindergarten students who are perceived by their teachers as being above average in academic achievement ability and the private speech of those children who are perceived by their teachers as being below average in academic achievement ability?
2. Is there a statistically significant difference between the private speech of boys and the private speech of girls?
3. Is there a statistically significant difference between the private speech of those children who are judged by their teachers as being above average in sociability and the private speech of those children who are perceived as being below average in sociability?
4. Is there a statisticaly significant difference between the private speech of those children who

are from middle class socioeconomic backgrounds and the private speech of those children who are from lower class socioeconomic backgrounds?

Population

The sample was drawn from a large elementary school consisting of grades k-5 and located in a northeastern suburb of a large city in the Southeast. The children attending the school are from lower to middle class socioeconomic backgrounds. Many of them live with only one parent in apartments or trailers. The area is extremely transient, and it is not unusual for a student to withdraw and return to the school several times during a school year. While the population is predominantly white, over 20 different nationalities are represented in the school. There is also a higher than average incidence of neglect and abuse, both physical and sexual, reported to the school counselor each year.

Subjects

The 40 subjects of this study were drawn from the school's 8 kindergartens and 1 of the school's 2 readiness classes. One readiness teacher was unable to participate in the study due to scheduling conflicts.

Of the 40 subjects, 27 were white, 10 were black, 2 were Hispanic, and 1 child was Asian. Twenty-nine of the children were boys and eleven were girls.

Each teacher was asked to use her professional judgement in choosing two to three children from her class whom she considered to be above average in academic achievement ability and two to three children whom she considered to be below average. These teachers had a mean of 8.7 years of total teaching experience and a mean of 5.4 years of teaching experience in a preschool setting. Six of the teachers held Bachelors Degrees, two teachers held Masters Degrees, with one of those at work on an Educational Specialist Degree. The remaining teacher held an Educational Specialist Degree.

Procedure

This study was conducted by this kindergarten teacher/researcher from November, 1989 to May, 1990. This length of time was necessary due to the teacher's teaching schedule and to the schedules of the other teachers participating in the study. The teacher was able to work with two to three children one at a time on only one morning per week, with the teacher and

child sitting on the floor in a relatively quiet corner of the hallway outside of the teacher's room.

In order to collect the children's private speech utterances, the teacher asked them to perform a task that she considered challenging. The children were shown a commercial box of attribute blocks. This box, which had a lid, was 8 inches by 12 inches in size, and held one set each of large and small circles, squares, triangles, and rectangles. The box, when empty, contained eight recessed compartments which corresponded to one-half of the shape and size of each set of blocks. This meant that the blocks could only be placed in an upright position with only the bottom half of each block resting in the recessed compartment. It also meant that all of the blocks could only be placed in the box in one way in order to be able to replace the lid.

Each child was shown the box of blocks and asked to look at the location of each set carefully. The teacher then slowly turned over the box, allowing the blocks to fall to the floor. She mixed all of the different sizes and shapes together and said to the child, "I would like for you to put all of the blocks back into the box just like they were before." "You can

tell whether or not you have them all in the right places if there are no blocks left over, and if you can put the lid back on so that it fits." The teacher then told the child that she was going to sit on the floor close by, but that she was going be finishing some work she had to do, and that the child needed to complete the task alone.

The teacher wrote down all private speech uttered by the child during the performance of the task exactly as said by the child, until 20 utterances were collected. However, if after a few minutes passed with no private speech uttered, the teacher introduced a stuffed hippopatomus named "Herman". Herman himself "spoke" to the child, saying that he too was going to have to put the blocks back in the box later in the day, and that he would appreciate it if he could "hear" how it was done. Herman then sat next to the child while the task was completed. In some instances, the child would at times forget to talk to Herman and if so, Herman would provide a gentle reminder. The teacher continued to record all of the child's utterances until 20 were collected.

For some children this task proved to be very difficult, and they became extremely frustrated and

were unable to reach completion. As soon as 20 responses were collected, the teacher assisted these children, so that no child left the activity without having experienced success, assisted or not. Once all utterances were collected, the teacher coded each utterance according to the levels and sublevels of private speech used by Manning and White (in press) in their recent study comparing the spontaneous and teacher-induced private speech of kindergarteners considered to be either analogical or nonanalogical reasoners.

It should be noted here that this study began with the researcher interested only in whether or not statistical differences occurred in the types of private speech used by those children who were perceived by their teachers as being above or below average in academic achievement ability. However, once all utterances were coded, it was felt that it would be interesting to discover whether or not statistical differences occurred with regard to gender, sociability, and socioeconomic status.

Design

This causal-comparative study was initially designed to determine whether or not the dependent

variable, kindergartener's private speech during the performance of a task, is affected by the independent variable of teacher-perceived academic ability. The independent variables of teacher-perceived sociability, gender, and socioeconomic status were added once all data had been collected.

The dependent variable of kindergarteners' private speech during the performance of a task was divided into 4 broad categories or levels. Each level was further divided into subcategories, resulting in a total of 13 subcategories. Beginning with Level One, each level and category represented a more mature level of private speech. The first level was considered to be Task Irrelevant private speech and consisted of the subcategories of expressing, commenting (imaginary others), and questioning. The second level, Task Relevant (unhelpful) private speech consisted of the two categories of Giving Up and Questioning. The third level, Task Relevant (helpful) private speech consisted of the four subcategories of focusing, describing, questioning, and directing. The final level, which was considered to be a higher form of level three, Task Relevant (helpful) speech, consisted of the higher subcategories of correcting, coping, reinforcing, and

solving. As mentioned above, these categories were taken from a recent study conducted by Manning and White (in press). Once all 20 of each of the 40 subjects' utterances were recorded, each utterance was coded according to the 4 levels and 13 sublevels, resulting in a total of 800 utterances and codes.

The independent variable of teacher-perceived academic ability was divided into those children who, according to their teachers, fell into the categories of either above or below average. The teachers based their judgements on the productivity of a child's work habits, emotional maturity, and achievement in such areas as recognition of numerals and alphabet letters, shapes and colors, success in matching numerals to sets and sounds to letters.

With regard to the independent variable of sociability, teachers were asked to use their judgement in determining whether or not they considered a child to be above or below average in sociability. These judgements were based on how well the child got along with peers and the child's willingness to share and cooperate.

Teachers were also asked to use their judgement as to whether or not a child was considered to be from a

middle or lower socioeconomic background. This was determined by whether or not the child received free lunch.

Reliability

Copies of the uncoded private speech utterances of four of the study's subjects were randomly selected and given to another researcher familiar with the coding system used. These utterances were then recoded and compared with the original codes, resulting in an interrater reliability of .70.

Statistical Analyses

Means and standard deviations were first calculated at each level of private speech in order to compare the types of private speech used by children in each of the levels of each independent variable. Independent t-tests ($p < .05$) were conducted at each level of private speech in order to determine whether or not any statistical differences occurred between any of the groups.

Summary

The study's population and sample, as well as its method, procedure, and design are discussed in this chapter. A brief description of the method used for statistical analysis is also included.

Chapter IV

Results

This study was designed to determined whether or not a statistical difference exists between the types of private speech used by kindergarten students during the performance of a task, based on teacher-perceived academic achievement ability, gender, sociability, and socioeconomic status (SES).

The dependent variable of private speech was divided into the same 4 broad levels and 13 sublevels as used by Manning and White (in press), with Level I being that of Task Irrelevant private speech and Level II being that of Task Relevant (unhelpful) private speech. Levels III and IV consisted of Task Relevant (helpful) private speech, with Level IV consisting of more mature forms than those found in Level III.

Descriptive Statistics

Means and standard deviations of the number of children in each level of the four independent variables of teacher-perceived academic achievement

ability, gender, and SES were calculated at each of the four levels of private speech production. This was done in order to compare and determine the different types of speech used by children in each level of each of the independent variable categories. In Table 1 means and standard deviations are reported at each private speech level for the independent variable of teacher-perceived academic achievement ability. In Table 2 means and standard deviations are presented at each level for gender, with Tables 3 and 4 showing means and standard deviations at each level of private speech for sociability and SES, respectively.

Results

Independent *t*-Tests were conducted at each of the four levels of private speech production in order to determine whether or not a statistical difference existed during the performance of a task for the dependent variables (i.e., academic achievement ability, gender, sociability, and SES).

Question one: Is there a statistical difference between the types of private speech used by those kindergarten children during the performance of a task who are perceived by their teachers as being above

Table 1

Descriptive Statistics: Means and Standard Deviations for Levels of Teacher Perceived Academic Achievement Ability at Each Private Speech Level.

Academic Achievement		
Private Speech Levels	Mean	Standard Deviation
Level I		
Above Average	0.45	0.94
Below Average	0.45	0.99
Level II		
Above Average	2.05	1.9
Below Average	4.85	4.24
Level III		
Above Average	11.80	5.05
Below Average	9.2	4.29
Level IV		
Above Average	5.70	5.27
Below Average	5.50	3.41

n=40 (20 students above average and 20 below)

Table 2

Descriptive Statistics: Means and Standard Deviations for Gender at Each Private Speech Level.

Gender		
Private Speech Levels	Mean	Standard Deviation
Level I		
Boys	0.48	0.98
Girls	0.36	0.92
Level II		
Boys	3.41	3.52
Girls	3.54	3.83
Level III		
Boys	10.27	4.98
Girls	11.09	4.50
Level IV		
Boys	5.82	4.87
Girls	5.0	2.82

n=40 (29 boys and 11 girls)

Table 3

Descriptive Statistics: Means and Standard Deviations for Levels of Sociability at Each Private Speech Level.

Sociability		
Private Speech Levels	Mean	Standard Deviation
Level I		
Above Average	0.51	1.01
Below Average	0.30	0.85
Level II		
Above Average	3.11	3.15
Below Average	4.15	4.33
Level III		
Above Average	10.88	4.75
Below Average	9.69	5.02
Level IV		
Above Average	5.48	4.74
Below Average	5.84	3.69

n=40 (27 students above average and 13 below average)

Table 4

Descriptive Statistics: Means and Standard Deviations for Levels of Socioeconomic Status (SES) at Each Private Speech Level.

Socioeconomic Status		
Private Speech Levels	Mean	Standard Deviation
Level I		
Middle Class SES	0.50	0.97
Lower Class SES	0.30	0.94
Level II		
Middle Class SES	3.46	3.86
Lower Class SES	3.40	2.59
Level III		
Middle Class SES	10.96	5.26
Lower Class SES	9.10	2.84
Level IV		
Middle Class SES	5.06	4.57
Lower Class SES	7.20	3.45

n=40 (30 students middle SES and 10 students lower SES)

average in academic achievement ability and those who are perceived as being below average? In Table 5 the results of independent *t*-tests computed at each of the four levels of private speech production are shown. These findings indicate that no statistical difference occurred between the two levels of teacher-perceived academic ability at Level I, Task Irrelevant private speech, $t(2,38)=.00$, ns. Level III, Task relevant (helpful) private speech, also indicated no statistical difference between the two groups, $t(2,38)=.75$, ns, nor did Level IV, $t(2,38)=.14$, ns. A statistical difference did occur, however, at Level II, Task Relevant (unhelpful) private speech, $t(2,38)= -2.67$, $p<.05$, indicating that during the performance of a task, kindergarten children perceived by their teachers to be below average in academic achievement ability appear to produce a larger amount of Level II, Task Relevant (unhelpful) private speech than do those perceived as being at a higher academic achievement level.

The second question in this study was: Is there a statistical difference between the types of private speech used by kindergarten boys and girls during the

Table 5

Results of Independent *t*-Tests: Comparisons of Levels of Academic Achievement Ability at Each Private Speech Level.

Academic Achievement		
Private Speech Levels	*t*-test	*F*
Level I	.00	ns
Level II	-2.67	.01*
Level III	1.75	ns
Level IV	.14	ns

Note. n=40 (20 above and 20 below average)

df=38 and 2

*$p < .05$.

performance of a task? Results for this question were also calculated by using an independent *t*-test. In Table 6 it can be seen that no statistical difference occurred between boys and girls at Level I, $t(2,38)=.34$, ns. There was also no indication of any statistical difference between boys and girls at Level II, $t(2,38)=.10$, ns. No statistical difference occurred at Level III, $t(2,38)=.47$, ns, or at Level IV $t(2,38)=.52$, ns.

Question number three was: Is there a statistical difference between the types of private speech used during the performance of a task by those kindergarten students who are considered to be above average in sociability and those who are considered to be below average? Again, results of independent *t*-tests were used in order to compare the two groups at each level of private speech. No statistical difference occurred between the two groups at Level I, $t(2,38)=.64$, ns. Results at Level II private speech also indicated no statistical difference, $t(2,38)=.86$, ns. No statistical difference was indicated at Level III, $t(2,38)=.73$, ns, or at Level IV, $t(2,38)=.24$, ns. Please refer to Table 7.

Table 6

Results of Independent *t*-Tests: Comparisons of Gender at Each Private Speech Level

Gender		
Private Speech Levels	*t*-test	*F*
Level I	.34	ns
Level II	.10	ns
Level III	.47	ns
Level IV	.52	ns

Note. n=40 (29 boys and 11 girls)

df=(2 and 38)

Table 7

Results of Independent *t*-Tests: Comparisons of Levels of Sociability at Each Private Speech Level.

Sociability		
Private Speech Levels	*t*-test	*F*
Level I	-0.64	ns
Level II	.86	ns
Level III	-0.73	ns
Level IV	.24	ns

Note. n=40 (27 above average and 13 below average)
df=(2 and 38)

The final question in this study was: Is there a statistical difference between the private speech of kindergarten students during the performance of a task who are from middle class socioeconomic backgrounds and those who are from lower class socioeconomic backgrounds? Independent *t*-tests were computed and used here also in order to compare the two groups at each of the four levels of private speech. Referring to Table 8, no statistical difference was found between the two groups of kindergarten students in the production of Level I private speech, $t(2,38)=.56$, ns. No statistical difference was found at Level II, $t(2,38)=-0.05$, ns. Level III indicated no statistical difference, $t(2,38)=-1.06$, ns. A comparison of the two groups at Level IV also resulted in no statistical differences, $t(2,38)=1.34$, ns.

Summary of Statistical Analyses

The results of the statistical analyses used to determine whether or not significant differences occurred in the types of private speech used by kindergarten children during a task performance with regard to their teacher-perceived academic ability, gender, sociability, and socioeconomic status were discussed in this chapter. Means and standard

Table 8

Results of Independent *t*-Tests: Comparisons of Levels of Socioeconomic Status (SES) at Each Private Speech Level.

Socioeconomic Status		
Private Speech Levels	*t*-test	*F*
Level I	-0.56	ns
Level II	-0.05	ns
Level III	-1.06	ns
Level IV	1.34	ns

Note. n=40 (30 above average and 10 below average)
df=(2 and 38)

deviations for each of the independent variables at each of the four private speech levels are reported and can also be found in Tables 1 through 4. Independent *t*-tests were also computed and their results can be found in Tables 5 through 8.

A statistical difference ($p < .05$) occurred at Level II private speech between those children perceived by their teachers as being of either above or below average in academic achievment ability, with the children in the lower group producing more Level II, Task Irrelevant private speech. No other statistical differences were found between any of the other groups at any of the four private speech levels.

CHAPTER V

Conclusions

The purpose of this study was to investigate whether or not there is a difference between the private speech used by kindergarten children during the performance of a task, with regard to teacher-perceived academic achievement ability, gender, sociability, and socioeconomic status (SES). Generalizations of the results and conclusions of this study should be considered only as they relate to the limitations of the study.

Summary of the Results

In order to compare the type of private speech used by each group of children within each of the independent variables, the dependent variable of private speech was divided into four levels of private speech, the first being that of Level I, Task Irrelevant private speech. Level I was followed by Level II, Task Relevant (unhelpful) private speech. Level III and Level IV consisted of Task Relevant private speech, with Level IV consisting of more mature

forms than Level III. The results may be summarized as follows:

1. With regard to teacher-perceived academic achievement ability, a statistical difference was found between the type of private speech used by those children perceived to be above average and those perceived to be below average. This difference occurred at Level II, Task Relevant (unhelpful) speech, with those children perceived as being below average using more of this type of speech. No significant differences occurred at any of the remaining three levels of private speech production.
2. No statistical differences occurred between boys and girls at any of the four levels of private speech.
3. No statistical differences occurred between those children considered to be above average in sociability and those considered to be below average. This was true at each of the four levels of private speech.
4. No statistical differences were found at any of the four levels of private speech production between those children from middle class socioeconomic backgrounds and those from lower class socioeconomic backgrounds.

Discussions and Implications

The initial purpose of this study was to investigate whether or not there were differences in the types of private speech used by kindergarten children during the performance of a task who were perceived by their teachers as being either above or below average in academic achievement ability. Vygotsky (1972) believed that if while performing a task, the child found the task to be difficult or challenging, the child's private speech would increase, and that the more cognitively mature the child was, the more mature the child's private speech would be. This study lends support to Vygotsky's theory in that those children who were considered by their teachers to be below average in their academic ability used more unhelpful Level II, Task Relevant private speech than did those children who were considered to be below average.

No statistical differences, however, were found between the two groups at any of the remaining levels of private speech. This could be due to several possible reasons. First, because this study took place from November, 1989 to May, 1990, it is highly possible

that the extraneous variable of maturation played a major part in its results. Vygotsky (1972) believed that as children grow and mature cognitively, so does their private speech, until it finally turns inward and becomes inner speech, and is heard only by oneself. He also believed that young children are unable to distinguish between others as auditors and themselves as an auditor. In several instances during this study, children had to be prompted by a puppet to think aloud while performing the task of placing attribute blocks back into a box. Perhaps these children had reached a cognitive maturity level where their private speech had turned inward and had become inner speech. At the same time, however, perhaps these children were still unable to distinguish between others as auditors and themselves as an auditor. If so, then these children, when prompted to speak, may not have used actual private speech, but instead may have attempted to provide an "answer" for the teacher in order to please her. In other words, the child's self-guiding private speech may have already turned to inner speech and was heard only by the child. But, because the child still could not distinguish between speech that is heard by himself/herself and speech that is heard by the child

and others, for all the child knew, his/her inner speech was heard by the teacher too. Therefore, when the teacher asked the child to tell what he/she told himself/herself while performing the task, the child may not have understood what the teacher was asking and merely said something in order to please her.

Another possible reason for a lack of other differences found between these two groups was in the task itself. Perhaps the teacher's idea of replacing the attribute blocks back into the box was not as challenging to the above average students as she had previously thought. Maturation probably played a major part here also in that as the year progressed, so did the children, and by the end of the year the task may have been too simple for them. If this is true, then these children would have no need to use private speech as a tool for self-guidance. In order to obtain the spontaneous private speech of these students, the teacher probably should have periodically tested the task's difficulty level with the above average students, and if necessary, provided them with a more challenging one.

With regard to the three remaining independent variables of gender, sociability, and socioeconomic

status, which were added after all data had been collected, the problem of unequal groups probably greatly affected the results. It is important to remember, however, that the researcher did not ask teachers to choose a certain number of boys and/or girls. Consequently, teachers chose 29 boys and 11 girls. The same held true with sociability and SES. There were 27 students chosen who were considered to be highly sociable, with only 11 chosen who were considered to be below average in sociability. An even greater discrepancy existed between middle and lower class socioeconomic classes, with teachers choosing 30 children from middle class backgrounds and only 10 from lower class backgrounds.

Conclusions

This study found that those children who were considered by their teachers to be below average in their academic achievement ability used more Level II (unhelpful), Task Relevant private speech than did those who were considered to be above average. This is an important finding, because it suggests a way in which teachers who are trained in the identification of private speech a quick and easy clue as to which

children in their classes may need extra individualized attention.

It is the opinion of this teacher/researcher that there are entirely too many formal assessment instruments that teachers are required to administer to their kindergarten students. In many instances these assessments begin the first week of school and continue throughout the school year. Frequently, these instruments not only waste valuable instructional time, but also prolong the important component of teachers getting to know their students. Perhaps if teachers could be trained to observe and listen to the private speech of their young students, some of these instruments would no longer be necessary. For example, if a teacher should hear a child making comments and asking questions such as, "This is too hard", or, "Why do I have to do this?", while attempting to perform a relatively simple task for beginning kindergarten students (simple cutting, putting on shoes, completion of simple tasks, etc.), that teacher would know immediately that that child is unable to guide himself/herself through a difficult task and is probably in need of some extra attention. The teacher could immediately begin assisting that child, possibly

by teaching some self-guidance skills. This immediate attention would be of tremendous value in fostering the teacher's knowledge of the child, the child's self-esteem, and in the important development of the child's sense of trust in the teacher. This certainly seems to make much more sense than waiting a month or more for formal testing to be completed and results to arrive.

Teachers owe it to themselves and to their students to observe the private speech of the children in their classrooms. Quite often, the amount of frustration experienced by a student can be observed simply by listening to the student voicing it in his/her private speech. Perhaps educators should not be so quick to demand that the children in our classrooms remain quiet and orderly the entire time they are with us. Of course, when one adult is placed with 25 to 30 children in what is generally too small a space, a certain amount of quiet and order is necessary. However, it is important that teachers become educated as to the differences between social and private speech so that we can recognize those times when a little noise in the classroom might be necessary, and children can be allowed to guide

themselves while performing and learning new skills. When a teacher notices a child using private speech, it should give that teacher a clue as to how well that child understands the skill or task that he/she is attempting. If that speech shows the teacher that the child is frustrated and having difficulty completing the task, then the teacher can immediately intervene. If not, the teacher can be satisfied to allow the child to work at his/her own pace.

Implications for Future Research

Other studies concerned with the private speech used by young children during task performance, with regard to their academic ability, sociability, and SES, should be conducted using several researchers so that the extraneous variables of maturation and history might be better controlled.

The public schools offer researchers many opportunities to study and collect data from a wide variety of children from different cultures, nationalities, and socioeconomic classes. However, because of the many interruptions which may take place daily, it is an extremely difficult place to schedule times to carry out research. These difficulties are especially true when there is only one researcher, and

that researcher is also a teacher in the school where the research takes place.

In spite of these difficulties, private speech should be investigated in the public school setting. Most of what little research has been done, has been conducted in University laboratory schools with white, middle class children used as subjects. Investigations done in schools such as the one in which this study was conducted could provide valuable information in the area of private speech as related to culture, nationality, and SES.

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